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SCIENCE NEWS LETTER

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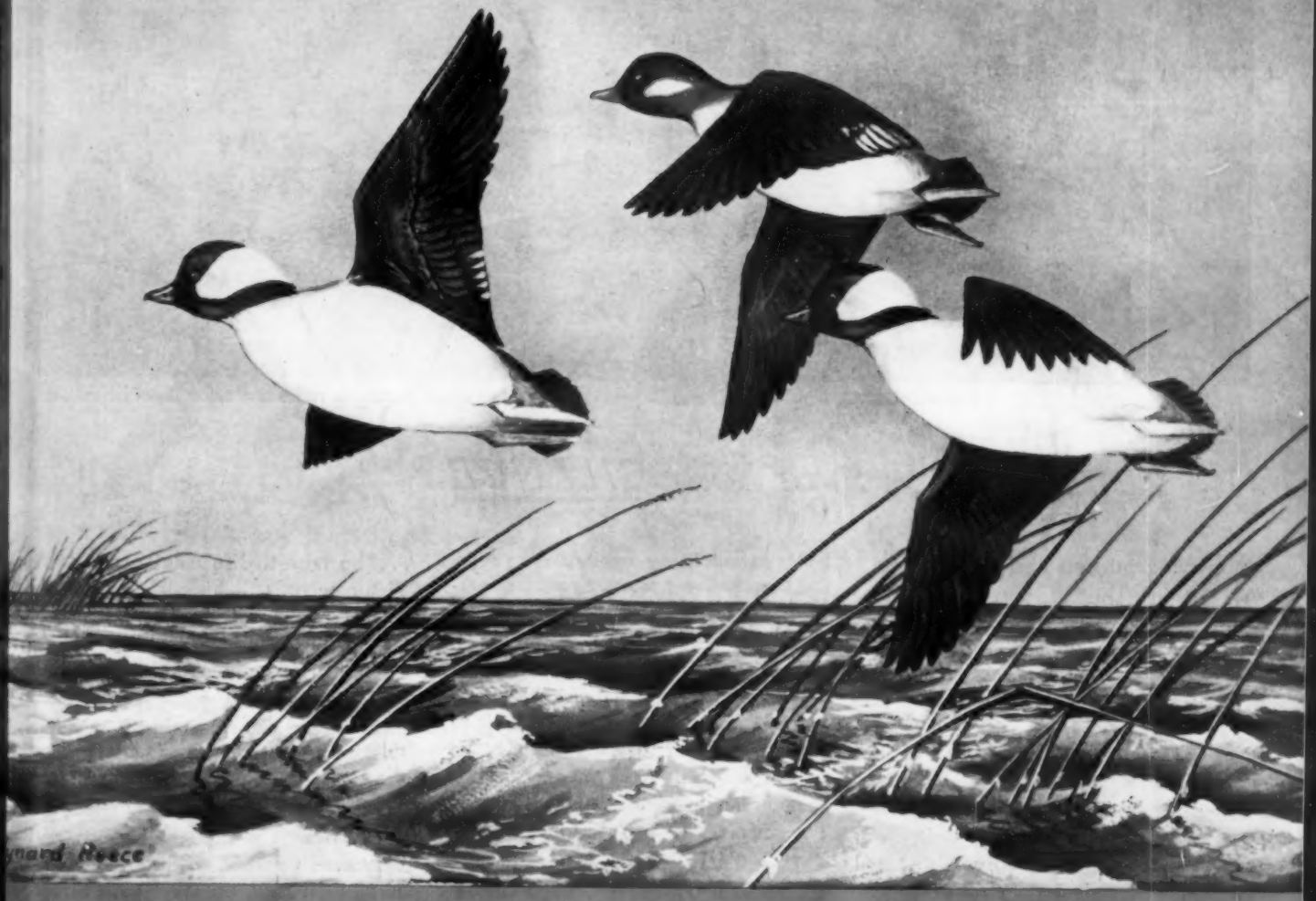

Beware the Hunter!

See Page 121

A SCIENCE SERVICE PUBLICATION

RCA Laboratories' "Chamber of Silence"—proving ground of tonal quality in radio and television instruments.

Ever hear SILENCE?

You walk into an eerie room. The door swings shut and you're wrapped in a silence so complete that it's an effort to listen. Sound in this vault-like cavern is reduced to the minimum of hearing.

But even *silence* has a sound of its own. Faintly you hear a subdued hiss; sometimes a soft hum. Scientists have suggested this may be the "noise" of molecules hitting the eardrums. Others wonder if it is caused by the coursing of the body's bloodstream.

On the walls, ceiling, beneath the open, grated floor of this RCA sound laboratory, hangs enough heavy rug padding to cover 250 average living rooms. Sound is smothered in its folds—echoes and distortion are wiped out.

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Information gained here is part of such advances as: The "Golden Throat" tone system found only in RCA Victor radios and Victrola radio-phonographs . . . superb sound systems for television . . . the true-to-life quality of RCA Victor records . . . high-fidelity microphones, clear voices for motion pictures, public address systems, and interoffice communications.

Research at RCA Laboratories moves along many paths. Advanced scientific thinking is part of any product bearing the names RCA, or RCA Victor.

When in Radio City, New York, be sure to see the radio, television and electronic wonders on display at RCA Exhibition Hall, 36 West 49th Street. Free admission. *Radio Corporation of America, RCA Building, Radio City, N. Y. 20.*

RCA **RADIO CORPORATION of AMERICA**

MEDICINE

Q Fever Poses Problem

Discovery of these disease germs in raw milk has added a new mystery to an already mysterious disease. But you don't get it from drinking milk.

➤ A NEW mystery has been added to that already mysterious disease, Q fever. The new mystery comes from the discovery of Q fever germs in raw milk. The discovery was made by Drs. R. J. Huebner, R. R. Parker and C. C. Shepard and Parasitologist W. L. Jellison of the U. S. Public Health Service and Dr. M. D. Beck of the California State Department of Public Health.

How the Q fever germs get into the mik and how they spread from the milk to humans make up the latest mystery.

You don't get Q fever from drinking milk, so far as the scientists can find. But, they say, there appears to be "a distinct possibility" that infected milk is a source of Q fever infection in man through some "as yet undetermined" way.

Q fever was first discovered among stock handlers in Queensland, Australia. That is where it gets its name, Q for Queensland. There have been outbreaks among stock handlers and packing house and stockyards workers in this country, and among laboratory workers. There was no suggestion that milk had anything to do with these outbreaks. Scientists thought it was most likely the germs spread through the air and were inhaled into the lungs.

In Los Angeles County last spring, however, Q fever attacked 17 persons and another 100 cases have since been reported in Los Angeles, Ventura, Santa Barbara and Orange Counties. More than half the patients lived near or worked in dairies. A fairly extensive survey showed that from one-tenth to one-fifth of the dairy cows in the Los Angeles area have antibodies for Q fever in their blood serum.

These findings led to extensive testing of milk from the cows of four dairies. The germs were found in milk from each of the dairies.

The cows apparently are not affected by the germs. They seemed to be healthy and some were among the best milk producers in the herds.

Pasteurized milk did not have Q fever germs in it after pasteurizing even when they had been in the milk before pasteurizing. So those who drink pasteurized milk need not worry about getting the disease from milk.

How you could get Q fever from milk without drinking it remains the mystery. The scientists are continuing to work on it.

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BIOCHEMISTRY

Biochemistry Fellowships Announced by Foundation

➤ FELLOWSHIPS for study toward Ph.D. degrees in fields of chemistry related to biological problems are available at the Biochemical Research Foundation at the University of Delaware at Newark.

The Foundation recently completed an investigation of the biological effects of irradiation for the atomic energy program and is continuing longer projects on basic problems of cellular growth.

Fellowships which are open to applicants holding M.S. degrees offer annual stipends of $1,800.

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PUBLIC HEALTH

Pick New Surgeon General To Replace Retiring Head

➤ THE appointment of a new Surgeon General for the U. S. Public Health Service, Dr. Leonard A. Scheele, and the retirement of Dr. Thomas Parran when his term expires on April 6 corresponds to the periodic changes of Chief of Staff of the Army. The object of such changes is to provide opportunity for advancement of other officers in the service.

Dr. Parran might have been retired after his first term if the war had not by then been so close and Dr. Parran so involved in planning for the emergency that a change might have been unwise. His retirement now does not mean that he will retire from public health work. Instead he is likely to continue such service in an international field. His experience along such lines and his conviction that health is an international problem suggest that he may take an increasing part in the World Health Organization as that develops further. He is at present and will continue as United States representative on WHO's interim commission.

Dr. Scheele, like Dr. Parran, is known to be a man of deep social consciousness. Born in Fort Wayne, Ind., on July 25, 1907, he did his undergraduate work at the University of Michigan and received his medical degree from Wayne University, Detroit, in 1934. Immediately after he was appointed to the regular commissioned corps of the U. S. Public Health Service. After the usual tours of duty as quarantine officer and in public health administrative work, he spent two years as special fellow in cancer research at Memorial Hospital, New York, and has since devoted himself to cancer control except for special assignments on war duty. These included organizing field casualty work for the Office of Civilian Defense and duty in Sicily, Italy, London and Germany, the last on the Allied Control Council under General Lucius Clay. Since the war he has served as assistant chief and since last July as director of the National Cancer Institute.

His appointment as Surgeon General, if confirmed by the Senate, is not expected to bring any immediate or drastic changes in Public Health Service policies or activities. His association with cancer research and control activities does not mean that he is uninterested in other phases of public health work and he is known as an able administrator.

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APPOINT NEW HEAD — Dr. Leonard A. Scheele will be the new Surgeon General of the U. S. Public Health Service, when the Senate confirms his appointment.

ASTRONOMY

Look for Comet Bester

It will be visible just before sunrise at the end of this month or the first week in March and may be seen by the unaided eye if it is a dark, clear night.

➤ STAR-LOVERS in the Northern Hemisphere will have a chance to see a comet not many days hence. It will be speeding toward the northern heavens, heading for the Big Dipper.

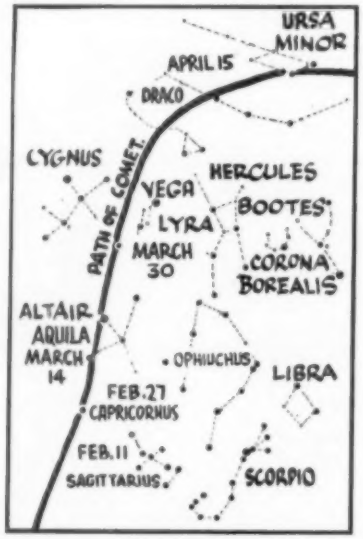
On a dark night with clear skies you may be able to pick it up with the unaided eye, but a pair of opera glasses or binoculars will help you identify it and see it in detail.

This comet was first discovered late last September. When spotted by Michiel J. Bester of Harvard's South African station, it was only a hazy splotch of light, noticeable because it changed its position among the stars. Since then it has begun to brighten and develop a tail.

About the middle of February, when it made its nearest approach to the sun Comet Bester was brightest. It can not yet be seen, however, because its light is lost in the brilliance of the sun.

Observers in the Northern Hemisphere may possibly first spot the comet late this month. But it is more likely that they will not see it until the first week in March, reports Dr. Leland E. Cunningham of Students' Observatory, University of California at Berkeley, who calculated its path.

The comet will probably appear quite suddenly. It will be found by some "night owl," as it will be visible just before sunrise. It will be moving quite rapidly, heading north.



Comet Bester, when discovered, was little more than a cluster of cosmic dust and gas. Actually there is less material in the head of a comet than in the smallest of the minor planets.

At first it shone only by reflected light. But as it approached the sun, the comet itself began to give off a little light. Today the dust reflects the sunlight and the cold gases shine by fluorescence.

On Feb. 16 the comet approached within 70,000,000 miles of the sun. This is closer to the sun than the earth ever gets and within a few million miles of being as close as the planet Venus comes.

Just what this comet will look like when it leaves the vicinity of the sun, astronomers are not venturing to guess. Like comet 1947 n, that gave such a spectacular show in the southern skies last December, it may have a long, thin tail. Then, again, its tail may be quite short and broad, or it may possibly not have any at all. Each comet is different and changes rapidly. When there is a tail, however, it always points away from the sun.

The possible brightness of the comet is another point on which astronomers prefer to hedge. Estimates indicate that it may possibly be as bright as third magnitude, about 20 times as bright as the faintest stars you can see in the country on a clear night. But predictions of a comet's brightness are only guesses at best.

The newest Comet Bester (the young South African astronomer discovered several comets last year), will probably be visible through good telescopes most of the year.

First spotted in the constellation of Eridamus, the comet immediately wandered southward so that comet seekers in the Northern Hemisphere, even those with good telescopes, had only a brief glimpse of it.

Although the comet will be around for some time, early March is the best time to look for it. The comet will be brighter then than later in the month and the moon, being new, will not interfere.

The comet will cross the celestial equator about March 13. From there it will move rapidly northward through the constellations of Aquila, the eagle Sagitta, the arrow; and Vulpecula, the little fox. It will travel along the border between Cygnus, the swan, and Lyra, the lyre, into the constellation of Draco, the dragon.

Throughout the following few weeks Comet Bester should be easy to spot as it will be near well-known stars. On March 18, it will be close to the first magnitude star Altair, Dr. Cunningham estimates. On March 29 it will have moved close to the well-known star Beta Cygni. By April 3 it will be about one-third of the way from the first magnitude star Vega to the first magnitude star Deneb Cygni.

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COMET DISCOVERER—Michiel J. Bester of Harvard's South African station last year discovered three comets out of a total of only nine new ones found.

During the second week of April it will be getting closer to the North Star. Comet Bester will pass across the constellations of Draco; Ursa Minor, the smaller bear; Draco again and into Ursa Major, the larger bear.

On April 13 the comet will be directly north of the "head of Draco." On April 21 it will pass between the Guardians of the Pole Star, Beta and Gamma Ursa Minoris. By this time, however, the comet will probably have faded so much that it will no longer interest amateur astronomers. But it should still show up well even then when seen through a telescope.

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INVENTION

Blade Kills Weeds by Cutting Underground Roots

➤ AN implement that kills weeds as cutworms kill your favorite garden plants, by clipping off their roots below the ground surface, is the invention on which Charles S. Noble of Nobleford, Alberta, has received U. S. patent 2,432,035. Mr. Noble is already well known for his system of sub-surface cultivation, which stirs the soil with minimum disturbance of surface-protecting vegetation or litter. In the present invention, a gently arced blade is drawn along a couple of inches under the surface, clipping off weed roots as it goes. The surface layer rides over the arc and drops back into place.

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MEDICINE

Experiments on Prisoners

Reduction in sentence should not be so great as to influence volunteering. This advice is given by a committee of medical and religious leaders.

➤ THE Soviet scientist who is reported as saying American medical scientists follow Nazi methods when they use prisoners in medical experiments can find how wrong he is by reading a report in the *Journal of the American Medical Association,* (Feb. 14).

Even when prisoners are given a reduction of sentence in prison as a reward for volunteering their services, the reduction in sentence should not be so great that it could influence them to volunteer for medical experiments. To make sure that it has no influence, the amount the sentence is reduced should be decided in relation to each prisoner and the nature of the experiment.

This, in brief, is the advice given the Illinois Department of Public Safety by a committee of medical, religious and lay leaders appointed by Governor Dwight H. Green of Illinois.

"The most important requirement for the ethical use of human beings as subjects in medical experiments is that they be volunteers," the committee states.

"Volunteering exists when a person is able to say 'yes' or 'no' without fear of being punished or of being deprived of privileges due him in the ordinary course of events."

An excessive reduction of sentence would be "inconsistent with the principle of voluntary participation," the committee explains, because it might exercise undue influence in gaining the consent of the prisoners to serve as subjects if their sole motive for doing so is to gain a reduction in sentence.

Prisoners are not the only persons who have volunteered for experiments planned to advance human welfare. Medical scientists, medical students, soldiers, sailors and others have also volunteered. These experiments have always been carried out according to certain ethical principles and rules.

One such rule is that if there is any reason to suspect that death or disabling injury may occur, as in experiments such as those of Walter Reed which showed the mosquito spread yellow fever, "then medical scientists should serve or should have served as volunteers along with nonscientific personnel," the committee states.

Consent of the volunteer must be obtained, without coercion, and he must have been informed of the dangers, if any.

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GEOLOGY

Home-Made Seismograph Detects Quake in Alaska

➤ AN earthquake that shook Fairbanks, Alaska, recorded itself on a seismograph built by a high school senior, Michael D. Lubin, 17, of Tottenville High School on Staten Island, N. Y. Although of simple construction, the instrument operates on the same principles as the elaborate mechanisms used by professional seismologists.

The seismograph he has constructed is of the type known as the Bosch-Omori, from its original inventors. Its foundation consists of a heavy block of concrete sunk in the earth, with a vertical pillar rising from it. Projecting horizontally from this, near its base, is a hinged horizontal arm or boom, which carries a heavy weight. An oblique wire or rod to the top of the pillar helps support the weight, which is free to swing as a horizontal pendulum.

A long but light continuation of the boom carries a writing point at its end. This rests lightly on smoked paper stretched over a horizontal cylinder or drum, which is slowly turned by clockwork. This is the recording mechanism.

When the waves from a distant earthquake, undetectable by ordinary human senses, reach the instrument they cause the vertical pillar to sway by a microscopic amount. The inertia of the heavy pendulum mass tends to hold it motionless against the swing of the boom. This in turn produces an exaggerated amount of apparent motion at the recording end, which registers itself as the familiar wiggly line of a seismogram.

Mr. Lubin states that his instrument is not as sensitive as he would like, because it had to be set in the clay subsoil of Staten Island, 50 feet above the nearest bedrock. Loose material like clay does not transmit waves so well as solid rock,

such as forms the foundation of professional observatories like that at Fordham University. Nevertheless, this instrument has in the short term of its operation recorded one major earthquake 3,300 miles away, in Fairbanks, Alaska, and a number of other shocks at lesser distances.

Mr. Lubin is a winner in the Seventh Annual Science Talent Search, and will be in Washington from Feb. 27 through March 2, at the Science Talent Institute.

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GENERAL SCIENCE

Scientists in Legal Mixup

Criminal prosecution endangers America's greatest scientists for their roles in contributing to the winning of World War II.

➤ HUNDREDS of America's greatest scientists "stand in theoretical danger of prosecution under the criminal statutes because of their contributions to the winning of a war," a former official of the wartime Office of Scientific Research and Development charged.

This ironic situation involves legal technicalities and some obscure legislation which Congress did not get around to passing. The scientists include Dr. Vannevar Bush, president of the Carnegie Institution of Washington and former director of OSRD, Pres. James B. Conant of Harvard and countless other leaders in science and education.

These men, who organized the scientific effort which produced radar, the proximity fuze and many other important developments which played important roles in winning World War II, served on OSRD and other groups without getting a salary. This made it possible for these men to continue in their positions as leaders of non-government organizations. Many of them might not have been able to serve as important planners and advisers to victory if they had been required to resign their peacetime jobs.

But this also has left them in a position of having violated the law, Pres. Irvin Stewart of West Virginia University, disclosed in a new book, *"Organizing Scientific Research for War"* (Little, Brown and Company, Boston, 358 pp., $5.00).

The legal difficulty comes from the fact that OSRD and some of its committees entered into contracts with several of the nation's best-known scientific institutions while leading officials of the institutions were serving with OSRD. Examples cited by Dr. Stewart include Harvard University, Massachusetts Institute of Technology, California Institute of Technology, Columbia University, University of Illinois, University of Pennsylvania, Johns Hopkins University and Bell Telephone Laboratories.

Dr. Stewart, who served as deputy director of OSRD under Dr. Bush, points out that the wartime organization did not permit members to participate in consideration of contracts with their own organizations. But the legal dilemma was never formally solved.

In 1941, Dr. Bush received an opinion that his own position was not in violation of the law. Then, in 1943, a ruling on local OPA boards apparently made the scientists liable under sections 109 and 113 of the Criminal Code. In both the Seventy-seventh and Seventy-eighth Congresses legislation to make the scientists exempt from these sections of the code failed to pass.

Under the Criminal Code, violators of section 109 "shall be fined not more than $5,000 or imprisoned not more than one year, or both. . . ." Maximum penalties under section 113 are a fine of $10,000 and not more than two years' imprisonment.

Dr. Stewart believes that, as things stand, many famous scientists have violated these sections.

"Fortunately, it does not seem at all likely that any of them will ever be prosecuted for those technical violations, for in practice the OSRD avoided situations involving actual conflicts of interest," he explains, "but there is no denying the theoretical possibility is there."

The legal tangle is only one of several technical difficulties, outside the laboratory, which OSRD faced in organizing American scientists for Word War II. Manpower, supplies, security and publicity were all a part of the administrative headaches which plagued science leaders as well as military officials in the war. And Dr. Stewart's report on administering science indicates that even leading scientists were not able to develop a completely satisfactory "redtape-snipper."

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***HALF-TON MOVER**—Claimed to do work of four men with wheelbarrows, this machine has a capacity of 1000 pounds of wet or dry materials and the ability to climb a 20 per cent grade with a full load. It has a three horsepower air-cooled engine and operates for eight hours on three gallons of fuel. It can be equipped with a bucket or a sturdy steel and wood platform deck and there is even a snow plow attachment available.*

MEDICINE

Cut Child Cancer Deaths

Early recognition and treatment can save many young children from this killer. Period of greatest mortality is from birth to the fifth year.

➤ TOO many babies and children are dying needlessly of cancer. Many could be saved by early recognition and treatment, Dr. Harold W. Dargeon of Memorial Hospital, New York, declares in a report in the *Journal of the American Medical Association* (Feb. 14).

A constantly hopeless attitude when cancer is discovered in a child is "not justified," he states.

From birth to five years is the age period when the largest number of cancer deaths occur in children. It is also the period when a large number of curable cancers in children are found.

The family doctor is the key person in the fight to cut child cancer deaths, Dr. Dargeon declares. It is the family doctor who is first consulted about a child's bruises and bumps, his unusual growth or failure to grow, his problem behavior and his vague illnesses which might be early signs of cancer. His opinion and advice are the basis for the family's decisions.

Cancer, leukemia and other tumors have become such great killers of children that in the past 10 years they exceeded almost all common diseases among the causes of death in certain age groups during childhood.

In New York, Dr. Dargeon reports, these diseases and Hodgkin's disease killed 392 children during 1942, 1943 and 1944. During the same three years, tuberculosis killed 291, meningitis 150, whooping cough 154, infantile paralysis 86, syphilis 55, measles 35, and scarlet fever 17.

The six places in the body where cancer most often attacks in childhood are: the bones, the kidneys, the eye and eye socket, the lymphatic and blood-forming organs, the soft tissues such as muscle and fat, and the nervous system.

Proper treatment for cancer in children is now offered in many parts of the country, Dr. Dargeon states.

"The current necessity is for greater attention to earlier diagnosis."

Children should have health examinations every month from birth to one year of age, every three months from one to six years and twice a year thereafter, as part of the fight to detect and remove curable cancer. These examinations, Dr. Dargeon says, should include X-rays of the chest and a complete blood count in addition to other pediatric routines.

Investigation and repeated investigation should be made, he stresses, in the case of a child who has symptoms not quite typical of a common disease, or who is precocious or retarded, especially if the departure from the norm has been increasingly apparent or if he has periodic vague illnesses with periods of normal health between attacks.

Unusual growth or retardation of growth of the body as a whole or some member of it should suggest to the doctor the possible presence of a tumor.

The child who is a behavior problem may also have a tumor or cancer.

Tumors other than cancer should not be taken lightly.

Any tumor, whether cancerous or not, may cause death if its size, rapidity of growth, location or interference with function seriously disturbs vital activities, Dr. Dargeon warns. Most striking examples of benign, that is, non-cancerous, tumors which are very serious are those within the head. They involve such important structures that, though for the most part not cancerous, they may result in high mortality.

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MEDICINE

Vitamin E Relieves Pain Caused by Knots in Feet

➤ TRY large doses of vitamin E, before resorting to surgery, for patients with painful knots of tissue on the soles of the feet, Dr. J. Vernon Luck of Los Angeles advised fellow orthopedic surgeons in Chicago.

The condition is called plantar fascia, or Dupuytren's contracture. When it occurs on the palms of the hands it is called palmar fascia.

When the disease affects the palm of a hand there is a drawing down of the fingers into the palm. This condition, common in middle aged and elderly men, is due to a thin, tough tissue between the skin and muscles and tendons, or leaders, of the palm.

The patient becomes unable to straighten one or more of his fingers, noticing at the same time the appearance of small, tumorlike masses and cords of very hard tissue beneath the skin of his palm.

"In the foot condition, knots of tissue and cords develop in the sole, similar to those that develop in the hand," Dr. Luck said. "It is very rare, however, that the toes are drawn down in the manner that the fingers are flexed into the palm. The knot-like structures in the sole often have been mistaken for cancerous tumors. In other cases the true condition was not recognized and the patients were treated with arch supports without benefit.

"Treatment in the past has been chiefly surgical, particularly for the hand lesions.

"Treatment of the feet also has been surgical, but in recent years several investigators have obtained good results with large doses of vitamin E. The patients have been relieved of pain, but the treatment actually affords little relief of the contractures."

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MIDGET ELECTRIC MOTOR—World's smallest, this pygmy power plant is so tiny that a half-dozen fit comfortably in a lady's thimble. Called an "Electrotor," it is 3/16 of an inch in length and diameter, weighs less than a gram, requires 1½ volts, and runs with high efficiency at 7,000 r.p.m. It is one of a series of sub-miniature motors invented by J. V. and J. E. G. Eurich, brothers, of Lancashire, England and will be manufactured in this country.

GENERAL SCIENCE

Czechoslovakian Chemists Begin Study in U. S.

➤ TWO Czechoslovakian chemists have arrived in this country to begin studies as the first fellows in a program financed by the American Chemical Society through the United Nations Educational, Scientific and Cultural Organization (UNESCO).

Dr. Ivan Vavruch, chief chemist of a government beet-sugar factory at Cerekvice, will study colloid chemistry at the Massachusetts Institute of Technology, while Dr. Milos Hudlicky of the Institute of Organic Chemistry, Prague, will specialize in fluorine chemistry at Ohio State University. The young scientists, both 28, will work in this country six months under terms of the grants.

Funds for the fellowships are provided in a $25,000 donation to UNESCO made by the American Chemical Society, the first group to make such a contribution to the UN group. Other countries which are expected to send chemists to this country for the six-month study period of the grants are China, Poland, Greece and the Netherlands.

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BOTANY

Pollen Grains Measured By High School Student

➤ POLLEN grains are subjects of exact science to Elmon Lee Coe, 16-year-old senior at North Phoenix High School in Phoenix, Ariz. Not content with sketching them as he observes them through his microscope, he uses a measuring device to obtain an accurate record of their dimensions, in order to make them easier to identify.

Pollens from desert flowers have been his special interest. He has measured and made drawings of grains from several kinds of cactus, including the sahuaro or giant cactus, as well as those of century plant, yucca, palo verde, mesquite and greasewood. However, he has also paid considerable attention to wildflowers of the Southwest, such as gaillardia, prairie coneflower and Indian pink; and to cultivated plants like date palm, lemon, oleander, alfalfa and Shasta daisy. Also included in his collection are the pollens of such introduced weeds as Queen Ann's lace, dayflower, sow-thistle and Johnson grass.

Because the low-power microscope which he was using did not give the magnification he wanted, Mr. Coe introduced an extra lens into its optical system. When water proved an unsatisfactory medium in which to examine the grains, he took to xylol, a light oily medium.

In one of his hobbies he is not likely to have many imitators: he raises scorpions.

His willingness to experiment with optical instruments has led him to the construction of a spectroscope and a small telescope, and to the modification of the lens of his camera so that he can obtain greater magnification in making photographs of insects in his collection.

Mr. Coe is one of the winners in the Seventh Annual Science Talent Search for the Westinghouse Science Scholarships.

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ENGINEERING

Plastic Foam Materials Insulate Against Cold

➤ FOAM is the latest form of substance used in keeping heat out of subzero chemical materials.

Two plastic materials, puffed or whipped up to include large quantities of air, were described to the American Institute of Chemical Engineers meeting in New Orleans, as efficient low-temperature insulators.

One of them is a urea-formaldehyde foam, with the trade name of U. S. Flotofoam, which can be used in either shredded or block form. E. C. Van Buskirk and C. C. Surland of the United States Rubber Co., Mishawaka, Ind., reported that it weighs only eight-tenths of a pound per cubic foot.

Another insulation material, used in cold storage rooms, is a polystyrene plastic in foam form, called Styrofoam. O. R. McIntire and R. N. Kennedy of the Dow Chemical Company told how it is superior to corkboard usually used.

Glass in cellular form is also used to insulate low-temperature equipment, Victor Sanders, of the Pittsburgh Corning Corporation, told the chemists, while C. B. Bradley and J. F Stone of the Johns-Manville Sales Corporation predicted that still more new insulating materials will be developed through research.

Another new material is a fibrous silica which Leon Parker and John J. Foster of H. I. Thompson Co. reported was developed as insulation for jet aircraft. New uses of this material in various forms were predicted because of its high temperature resistance in thermal, electrical and acoustical applications.

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IN SCIEN

PHYSIOLOGY

Chemical Treatment Shows Protein Position in Cells

➤ A NEW tool for prying into the secrets of cell life is a compound of phosphorus and tungsten known as phosphotungstic acid. It has been used by Drs. A. Engstrom and M. A. Jakus of the Karolinska Institutet, Stockholm, to find out where in the cell the greatest concentrations of proteins occur.

Proteins, which are the food materials that become the actual replacement parts of living matter, have the property of binding phosphotungstic acid. The areas in which this occurs become less transparent to X-rays, so that cells treated with the acid and then irradiated will give light-and-dark patterns telling of the distribution of the proteins.

The technique is not yet fully perfected, the two Swedish researchers state in a letter to the editor of the British journal, *Nature*, (Jan. 31) but it is expected that further work now in progress will overcome certain present difficulties.

Science News Letter, February 21, 1948

CHEMISTRY-ASTRONOMY

Hydrogen, Helium Are Most Common Elements in Cosmos

➤ ELEMENTS most abundant in the visible universe are not necessarily the same as those most abundant on our particular planet, Dr. Harrison Brown of the University of Chicago stated before the meeting of the American Physical Society in New York.

In as much of the universe as the greatest telescopes can probe, the most abundant chemical elements are hydrogen and helium, followed in order by oxygen, nitrogen, carbon and neon. Of these, helium and neon were for long mere chemical curiosities, and although both are commonly used now neither is abundant.

Taking the earth as a whole, Dr. Brown said, the Big Four are oxygen, silicon, magnesium and iron. Familiar though they are in everyday life, carbon, nitrogen and hydrogen constitute only a negligible fraction of the planet's total mass.

Science News Letter, February 21, 1948

NCE FIELDS

MEDICINE

Anti-Flu Vaccination Failures Are Reported

➤ FAILURE of influenza vaccine to give protection in two different boys' schools is reported in the *Journal of the American Medical Association* (Feb. 14).

The reports are by Dr. Arie C. Van Ravenswaay of Boonville, Mo., on experience at the Kemper Military School, Boonville, and from Drs. M. M. Sigel, F. W. Shaffer, M. Wiener Kirber, A. B. Light and W. Henle of Philadelphia. The school in this experience is in New Jersey but is not further identified.

Both Dr. Van Ravenswaay and the Philadelphia group point out that other physicians have reported similar experiences with influenza vaccination last winter. In all these failures, the trouble seems to have been that a new strain of influenza A virus was responsible for last winter's outbreaks. This strain had not been included in the vaccines then available.

Suggestions for improving both the vaccine and tests for detecting the particular strain of 'flu virus in a given outbreak are given by the Philadelphia scientists.

Science News Letter, February 21, 1948

MEDICINE

Internal Organs Damaged In DDT-Poisoned Victim

➤ THE third death by DDT poisoning since this famous insect killer was introduced in 1943-1944 is reported by Dr. Nathan J. Smith of the Veterans Administration Center, Wadsworth, Kans., in the *Journal of the American Medical Association* (Feb. 14).

The victim was a 58-year-old laborer who accidentally drank about four ounces of a 5% solution of DDT. He immediately recognized his mistake and drank a quart of milk within a few minutes after swallowing the poison. He followed this by several glasses of beer. Neither this nor various other measures helped and the patient finally, five days later, went to the VA center for medical treatment which also, unfortunately, failed to save him.

To physicians the interesting point in Dr. Smith's report will be the details of kidney and liver damage found at autopsy. This patient was the first killed by DDT who lived long enough after the fatal dose for changes in the internal organs to develop to the point where they could be seen after death. Heretofore the only information on how the insect killer damaged was obtained from studies of laboratory animals. These changes seen in laboratory animals are, Dr. Smith reports, "not unlike" those seen in this latest human victim.

Science News Letter, February 21, 1948

MEDICINE

Streptomycin Cure of Plague Reported in India

➤ STREPTOMYCIN cure of plague was reported by General Sir Sahib Singh Sokhey, director of the Haffkine Institute in Bombay.

In experimental tests with plague-infected mice, streptomycin treatment resulted in 100% cures.

When 87 human patients with bubonic plague, including 15 in an advanced, usually fatal stage of the disease, were given streptomycin treatment, all but two recovered.

The streptomycin used in these studies and to treat the patients was donated by Dr. Robert D. Coghill of Abbott Laboratories, North Chicago, Ill., and the British Medical Research Council.

Science News Letter, February 21, 1948

ZOOLOGY

Bear With Six Cubs Reported from Canada

➤ BLACK BEAR sees Mama Dionne's quints and goes her one better—with sextuplets. What is believed to be the only case on record of sextuple birth in bears has been reported to Prof. William Rowan of the University of Alberta at Edmonton, Alberta, in a sworn statement by Tom Wykstandt, a veteran Canadian trapper.

Mr. Wykstandt met a female black bear, which seemed to be rather unusually thin. He shot her and also all of her family, which turned out to total six black cubs, all of the same size and apparent age.

Mr. Wykstandt, who is thoroughly familiar with the area over which he hunts and traps, declares that no other female bears were known to be in the neighborhood, although an adult male black bear was trapped within a few days at the same spot.

Science News Letter, February 21, 1948

WILDLIFE

Buffle-Head Ducks Design On New Hunting Stamp

See Front Cover

➤ TWO male and one female buffle-head ducks in flight is the design chosen for the Federal "duck stamp" to be used during the 1948-49 hunting season, Albert M. Day, Director of the Fish and Wildlife Service, announced.

This is the fifteenth in the series of migratory bird hunting stamps, all of which show wild ducks or geese of different species in some characteristic flight phase. It will be available at all first and second class post offices on July 1.

The current design, shown on the cover of this week's SCIENCE NEWS LETTER, is the work of Maynard Reece, staff artist for the Iowa State Department of History and Archives, Des Moines, Iowa.

Science News Letter, February 21, 1948

CHEMISTRY

High School Student Does Research on Hard Water

➤ HOW hard is hard water? A high school senior of Oak Park, Ill., David M. Geller, 17, has worked out the answer in terms of the water-softening power of a number of kinds of soap powder and other detergents. He has carried his research out to the fractions-of-a-cent point, telling which compound costs least per unit of hard water softened.

For accurate determination of results, he made up a synthetic hard water by dissolving a known weight of calcium sulfate, most familiar as gypsum, in a known quantity of distilled water. He made up his soap solutions with similar exactness, then added to each sample some of his hardened water, measured drop by drop until the soap was no longer able to produce any foam. This was the neutralization-point of that particular kind of soap.

Soap powders of the more conventional type all functioned rather much alike. Differences in cost, per unit of softening effect, were determined largely by market price per package, reduced to price per ounce. Greatest economy was achieved not by an old-type soap powder but by one of the newer detergents. On a cost-per-unit basis, this was more than 200 times more efficient than ordinary soap powders.

Mr. Geller will go to Washington at the end of this month, to participate in the Science Talent Institute.

Science News Letter, February 21, 1948

ENGINEERING

Oil Use Overtaxes Production

While the many advantages of this fuel are bringing it into increasing use, refining and transportation create a bottleneck in the available supply.

By A. C. MONAHAN

➤ THE convenience and cleanliness of fuel oil can be blamed in large part for the present so-called shortage. Hundreds of thousands of new oil-burning installations, for both heat and power, have created demands which overtax production.

The bottleneck in the available supply is in refining and transportation. Additional refineries are needed, but these complicated, elaborate plants costing millions of dollars can not be built in a day. Nor can they be built without the necessary steel. Refineries, pipelines, storage tanks, shipping cars and tankers are steel. This metal is a number one essential in the oil industry.

Many thousands of homes have installed oil-burning furnaces since the war, and prewar oil-burners that were converted to coal as a war measure are back on oil again. Thousands of office, school, hospital and factory buildings are now using oil for fuel, one reason being to save labor costs.

Mechanical Power

Thousands of diesel engines are now doing the work formerly done by coal-burning power-plants in factories, and even in locomotives. Mechanical power has made great strides in replacing animal power on the farm, and thousands of jobs on roads, in timber and mines, formerly done by hand labor, are now carried out with oil- or gas-burning machines.

There is enough crude oil in proven reserves in American earth to meet all domestic needs of the next decade or two, even if the requirements increase 50% in the next 10 years as predicted. But petroleum as mined can not be used in a furnace, engine or automobile. It must be refined. That means that it must be purified and separated into its hundreds of usable constituents—asphalt, road oils, lubricating oils, waxes, fuel oil, gasoline, naphthas and many sources of raw chemicals needed in daily life.

Few oil fields are located near consumption centers. That means that elaborate transportation facilities are necessary from fields to refineries, from refineries to distribution centers, and from them to local consumption areas.

Because of the shortage of steel, the enormous cost of erecting refineries, and for other reasons, the oil industry has tried to meet the increasing demand with present plants by searching out and eliminating all bottlenecks in the processes used. Also refineries have been converted from old-type equipment into improved forms wherever possible.

Step-up in Production

The result is a great step-up in production even if not sufficient to meet the greatly increased demands. The supply of fuel oil and gasoline will probably be limited for another year or so.

To make all the usable products that are obtained from petroleum, the crude must go through a cracking process. In this, molecules are broken down, and molecules of a different sort are set up. By cracking, heavy oil can be converted into gasoline. This makes it possible to obtain a much greater quantity of this automobile fluid than can be obtained from the crude by mere distillation.

One of the greatest steps taken in oil refining is the replacement of the early thermal cracking process with the catalytic cracking method. Prewar catalytic cracking methods have now been replaced with what is called a solid "fluid" catalyst technique. This uses an extremely finely powdered dry material which acts much like a liquid in its behavior.

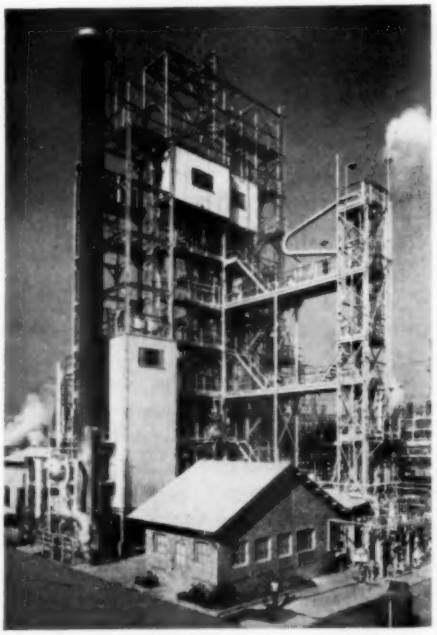
Conversion to the fluid catalyst technique has been one of the most important steps taken by the oil industry. The process is rapid, permits the breaking up of the heavy oil at a lower temperature than would be required otherwise, and influences the cracking in such a way as to give gasoline a lesser tendency to knock. This fluid catalyst technique produced the 100-octane aviation fuel that gave American aviators supremacy over the enemy in the air.

A catalyst is a substance whose presence promotes chemical action in some mysterious way, but which does not itself undergo any chemical change. In early catalytic cracking of petroleum, a solid clay-like material was used. The great problem was how to mix the gaseous petroleum with it and to separate the results, and particularly how to clean the catalyst of the carbon which collected on it during the process and made it finally valueless.

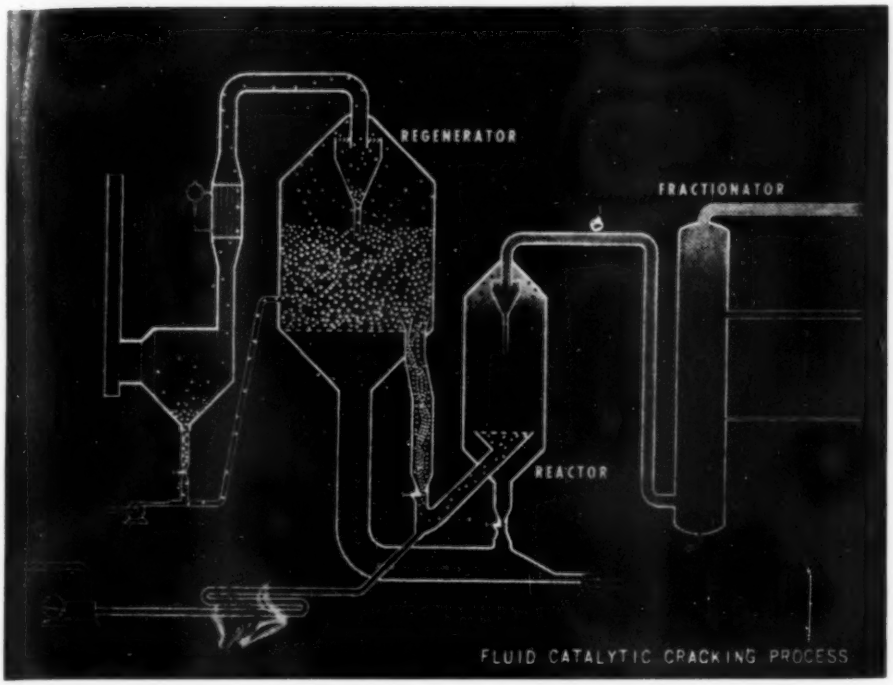
Fluidized Solid Catalyst

These problems are well solved by the fluidized solid catalyst now used. It looks like very fine white sand, and chemically is a synthetic product of alumina and silica. When air from underneath is blown up through the material, its surface becomes much like that of frothy soapy water.

Investigations at the Massachusetts Institute of Technology, sponsored by the Standard Oil Company of New Jersey, pointed the way to the development of this fluidized solid catalyst technique. Further developments were carried out at the company's research center at Baton Rouge. The developments at Baton Rouge were in pilot plant stage when the



PILOT PLANT—The oil industry conducts much research in these plants to determine the best commercial processes. This is one of the new installations at the Esso Laboratories, Baton Rouge, La., owned by Standard Oil.



OIL REFINING—The greatest advance in this field was made when the early older cracking process was replaced by fluidized catalytic cracking method, illustrated in the diagram.

war came. They were put immediately into commercial use, particularly to obtain the 100-octane aviation fuel, and fortunately were successful.

In the operation of the fluid catalytic cracking process, preheated crude oil enters the base of a giant steel retort, called a reactor, which may extend up in the air as high as a 10-story building. It carries in with it catalytic material as a suspended dust, and it passes through a bed of the material in the retort that may be 20 feet thick and 45 feet in diameter.

The suspended dust in the oil settles out in the bed which bubbles on the top much like boiling water. Cracking takes place in this bed, at a temperature of 900 degrees Fahrenheit, as the rising oil vapors come in contact with the sand like grains, and is completed in about 20 seconds.

Part of the catalyst, with carbon clinging to it, rises in the retort with the newly created vapors, but is separated by whirling air and passes by air pressure to a heating chamber, called a regenerator, where the carbon is burned off. Then the cleaned catalyst drops into the entering pre-heated crude, and makes another cycle. There are no mechanical pumps to help it on its journey. The air pressure is sufficient. It is the fluid condition that makes this possible.

Catalysts are also important in making fuel oils and gasoline from natural gas, and from coal. The present known petroleum reserves in the United States will take care of domestic needs only for a decade or two, it is claimed, but America will have home-produced liquid fuels for 1000 years or more. If no more petroleum can be found, it will come from natural gas, coal and oil shale. The coal supply is practically unlimited. There is also a great abundance of oil-producing shale.

Natural Gas Limited

The supply of natural gas is limited, but liquid fuels can be made from it for the next 25 years or so without exhausting the amount needed for gas lighting and heating. Fuel oils and gasoline can be made from natural gas at a cost that will permit their sale in competition with petroleum products. Liquid fuels from coal and shale will cost more to produce.

Already two plants are under construction, one in Texas and the other in Kansas, to use natural gas as a raw material. Much research has been conducted by the U. S. Bureau of Mines and by the oil industry to find the most satisfactory processes. One of the major projects at the Esso Laboratories of Standard Oil (N. J.) at Baton Rouge is concerned with this process. Another is with problems involved in making liquid fuels from coal. The two processes have much in common.

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Note **reduced** sectional view through the earth, which is only one of many drawings included on this one chart.

BESIDES

The solar system to scale showing comparative size of the planets, their diameters, surface gravity, number of moons, their mean distance from the Sun, and the mean distance between them. A schedule showing the speed of the Earth per day, per hour, per minute and per second on its journey through space along with the Sun, on its orbit around the Sun, and on its axis. A schedule showing the mean distance of the planets from the earth, and their time of rotation, and revolution, and the number of Moons of each. A drawing to scale showing the comparative size of the star Betelgeuse to the orbits of the planets around the Sun. A drawing to scale showing the comparative size of the Sun to the orbit of the Moon around the Earth. Name and diameters of the three largest asteroids, and the number of them charted to date. A scaled drawing showing the curvature of the Earth, and relative distance of the deepest spot in the oceans, and various relative heights above the surface. A "Time Table" for rocket-ships from the Earth to the planets and nearest star in terms of travel times at different speeds. An atomic table giving the melting and boiling points, density, and atomic weights of the elements. A drawing of the Moon with its distance, diameter, temperature and other information. A drawing showing the method of measuring the distance of near stars. A drawing showing the position of comets' tails as they journey around the Sun. A sketch showing the approximate position of our solar system in the Milky Way galaxy. The size of the Milky Way and its period of revolution, and speed of its outer rim. Temperatures at various heights above the earth as measured by instruments on V2 rocket tests, etc. etc.

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Do You Know?

Furfural, known for over a century but used commercially only in the past two decades or so, promises to become a very important raw material in chemical synthesis; it is now extensively used in making nylon.

Some gardeners recommend the application of a complete *fertilizer* to a level lawn while snow is still on the ground; spring thaws will carry the plant food down to the roots to be available when growth starts.

A new *insecticide,* Thiophos 3422 for short, but diethyl nitrophenyl thiophosphate chemically, is claimed to kill a wider range of insects than any chemical now in use including DDT.

Water should not be used to put out a *fire* around electrical equipment until the current has been cut off at the switch.

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A giant plant will soon be constructed in Pennsylvania to use coal in making liquid fuels. Pilot plants of the U. S. Bureau of Mines are pointing the way. The coal is first converted into water gas by a process long used to supply manufactured gas for homes in many American cities. From there on, the conversion of this product into liquid hydrocarbonates is similar to that used with natural gas.

The gases are first converted into carbon monoxide and hydrogen by an incomplete combustion or other process. These, with the help of an iron catalyst in a fluidized state, become the synthetic hydrocarbonates and water.

There is enough oil shale in America to yield over 95,000,000,000 barrels of gasoline if all could be extracted. When this rock is crushed and heated it gives off hydrocarbon vapors and gases much like those of petroleum which then, of course, have to be refined. The process is still costly, but a government pilot plant at Rifle, Colo., promises cheaper products as better methods are developed.

Science News Letter, February 21, 1948

SCA NEWS

National SCA Meeting

All members of Science Clubs of America are invited to attend by tuning in to CBS radio program on Saturday, Feb. 28, for future of science discussion.

➤ THE first national meeting of Science Clubs of America, with 15,000 clubs in the nation's secondary schools, will be held on Saturday afternoon, Feb. 28, when Science Service's "Adventures in Science" radio program over the nationwide network of the Columbia Broadcasting System will be devoted to this important event.

Originating from the Seventh Annual Science Talent Institute at Washington, being attended by the 40 winners competing for the Westinghouse science scholarships, eminent scientists will discuss "Great Future Problems of Science."

Several hundred thousand SCA members are expected to join the regular radio audience listening to this program directed by Watson Davis and heard over most CBS stations at 3:15 p. m. EST, 2:15 p. m. CST, 1:15 p. m. MST, and 12:15 p. m. PST.

Sponsors and members reading this notice are asked to announce this national SCA meeting to all clubs by circulating notices or posting this article on school bulletin boards.

The meeting will be reported in the SCIENCE NEWS LETTER so that the subject discussed can be considered at individual club meetings later.

SCA Affiliation Without Cost

Any teacher or other adult who is the leader or sponsor of a science club, who has not already done so, should arrange to affiliate with Science Clubs of America. There is no fee for affiliation. As sponsors already affiliated know, the 100-page SCA Sponsor Handbook, sent free to sponsors, is an essential aid and guide to organizing and conducting a science club. Others may obtain a copy of this book postpaid by sending $1 to Science Service.

Science News Letter, February 21, 1948

ECOLOGY

Forest Remnant Reveals Character of Former Woods

➤ AN idea of what the great American woods were like in pioneer days is offered in a survey of a forest remnant made by Miss Millicent M. Sawyer, 16-year-old student at Wiley High School in Terre Haute, Ind. Although the tract she studied is only about 20 acres in extent, it gives roothold to no less than 37 species of native trees and shrubs.

The forest remnant is a triangular piece of land containing two creek valleys, a ravine and a central ridge, giving a considerable variety of habitat conditions. Although lumbering was carried on there in earlier times, there has been practically no cutting for almost 60 years, so that the forest has had a chance to re-grow.

Apparently the area was never completely cleared, for Miss Sawyer notes the presence of some century-old beeches with trunks 30 inches in diameter. Presence of numbers of sugar maples suggests that the original stand may have been the old Eastern beech-maple climax forest; dominant at present, however,

is an oak-hickory association, with patches of other mixed hardwoods on the ridge and the creek bottoms. Among the species infrequently found in this region she lists blue ash, pin-oak, catalpa and Kentucky coffee tree, together with the large shrubs, service-berry and waahoo.

After Miss Sawyer's parents bought the tract as a site for their home, they had a considerable number of over-mature and defective trees felled and sawed into lumber for building. From now on, however, only limited cutting is planned. Miss Sawyer states:

"In the future, with due regard to its natural inhabitants, we plan to 'farm' the woods. All dead trees will be cut and left to decay. Most of the over-mature trees will be cut, but a few will be left around the building site for their esthetic value. As the young trees reach maturity, they will be cut for lumber and their tops used for fuel. Crowded, deformed and defective trees will be taken for firewood.

"With the good management which we plan to give the tract, it can be not only a pleasant place to live but also a sound financial investment. It can continue to be representative of the original forest of southwestern Indiana."

Miss Sawyer is one of 40 winners in the nation-wide Seventh Annual Science Talent Search.

Science News Letter, February 21, 1948

PSYCHOLOGY

Clearer Voice on Phone

➤ THE noise of escaping steam heard in one ear makes it easier to hear conversation over the telephone with the other ear.

You might think that the two noises would mix in your head making the speech unintelligible, or that the "Sh-h-h" noise would drown out what was being said.

But tests conducted at the Harvard University Psycho-Acoustic Laboratory by Dr. James P. Egan, now at the University of Wisconsin, showed that if the noise is kept at a moderate level of loudness it actually makes the speech heard with the other ear seem both louder and more distinct.

Listeners said, "When the noise comes on, it sounds as if the talker raises his voice in order to make himself heard above the noise," or that the speech sounded more "crisp."

Not only does the speech sound louder when the noise first reaches the other ear, but it continues to appear louder even after the noise has been turned off for a while. And the effect does not wear off after repeated exposures to the noise.

Dr. Egan gives two possible explanations of the odd experience. It is possible, he suggests, that the noise in the opposite ear has an effect on the muscles of the middle ear of the telephone ear. This theory fits in with the observation that the apparent loudness of the speech fades slowly back to normal after the noise is turned off.

The other explanation is based on certain observations regarding judgments of loudness. If you hear exactly the same note with both ears, it seems louder than the same sound does with either ear alone. But if the notes or sounds are very different, then the two do not add up to make a louder sound. The extent to which the two sounds add up depends upon the similarity in frequency of the two sounds.

The reason why the "Sh-h-h" noise like escaping steam makes speech sound louder in the other ear might be because there is some similarity between the noise and the voice which, in the case of the tests, was reading Adam Smith's "Wealth of Nations."

Details of the experiments are published in the *Journal of the Acoustical Society of America* (Jan.).

Science News Letter, February 21, 1948

CHEMISTRY

Hair Shampoo Being Made From Sub-Standard Coffee

➤ HAIR SHAMPOO is now being manfactured from sub-standard and other coffee which cannot be used for beverage purposes. Other products developed to utilize coffee that would normally be wasted are scheduled to be introduced later in the year.

The oils, glycerized materials and tannic acid contained in coffee beans form the basic ingredients in the new shampoo produced by Coffette Products, Inc., Brooklyn, N. Y. These natural raw materials, with no alcohol or harsh chemicals added, are said to give the shampoo unique qualities.

Science News Letter, February 21, 1948

"MAN'S MIND IS MAN HIMSELF"

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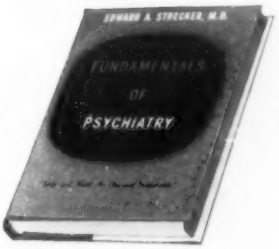

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GENERAL SCIENCE

NATURE RAMBLINGS
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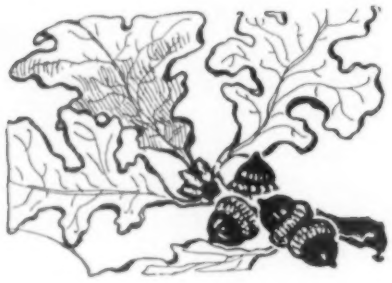

Statesmen-Scientists

➤ WASHINGTON'S birthday is always an occasion for comparing the stature of present-day statesmen and politicians with that of our first President and the men who worked with him during the first difficult days of our republic. As a rule, the moderns come off second best, even in the fields of law, economics and public affairs, for which most of them are specifically trained.

However, there is one field in which such comparisons between the Founding Fathers and public men of today are rarely made. Among our earlier statesmen it was nothing uncommon to find good knowledge of the sciences of their day, despite relatively poor facilities for dissemination of such knowledge. But scientific training among present-day makers of public policy has become so rare that its lack is simply taken for granted. We apparently are willing to entrust decisions on such immensely important scientific questions as atomic energy, soil conservation, public health and mineral resources to lawyers, bankers, businessmen and newspaper editors who "never took any science" when they were in college and who certainly haven't taken any since.

Yet our Founding Fathers made themselves masters of the science of their day simply as a part of what a decently educated man was expected to know—and most of them got their knowledge without benefit of college degrees, at that. Washington had no agricultural college to attend, yet he became one of the most advanced agriculturists of his day; he never even heard of an Institute of Technology, yet he was a good practical civil engineer, and some military historians declare that he thought out his military measures along engineering lines.

Franklin never even finished elementary school, yet he became one of the most versatile and brilliant scientists of his century, more than holding his own in an intellectual French royal court and being elected to membership in the Imperial Russian Academy of Science. Patrick Henry was perhaps as much of a professional politician as the times produced, yet had some well-grounded views on such things as soil erosion. Jefferson's interest and activity in scientific fields are a familiar classic of American history.

Latterly Congress has come to some realization of its lacks in scientific and technical knowledge and has attempted to remedy them by arranging for a corps of advising specialists. That will help, but it is not enough. There is no outside substitute for knowledge inside your own head.

Science News Letter, February 21, 1948

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MEDICINE

Whooping Cough Remedy

➤ FIRST trials in patients of a new penicillin-like remedy active against whooping cough are reported by Dr. P. N. Swift of the County Hospital, Farnborough, in the *Lancet,* (Jan. 24), British medical journal.

The 10 little patients, whose ages ranged from one month to two and one-half years, all showed a definite response within the first 48 hours. Two of the 10 died. In both of these the drug seemed to control the disease, and the whooping cough was not considered the direct cause of the deaths. The other eight recovered, the speed with which they got well depending on how early in the disease the new drug was started.

Aerosporin is the name of the new drug which may turn out to be a remedy for typhoid fever as well as for whooping cough. While penicillin comes from a mold, aerosporin comes from a bacterium found in soil and air and in the tap water in an American city, Chicago. It was discovered by Drs. G. C. Ainsworth, Annie M. Brown and G. Brownlee of the Wellcome Physiological Research Laboratories.

Aerosporin is "more discriminating" than streptomycin, test-tube studies reported by Drs. Brownlee and S. R. M. Bushby show. It has no action against the tuberculosis germ. But for germs against which it is active, it is 10 to many hundred times more powerful than streptomycin.

The new antibiotic, as this kind of remedy is called, does not merely check germs but kills them. It has the further advantage that disease germs do not readily grow resistant to it.

It cannot be given by mouth, because it is not absorbed from the stomach or intestines. It is more acutely toxic than streptomycin but its greater anti-germ activity gives it a large margin of safety. A kidney-damaging effect was gotten rid of as the drug was further purified. Aerosporin is not yet available commercially.

Science News Letter, February 21, 1948

ASTRONOMY

Cluster of Six Galaxies Found Extremely Dense

➤ A GROUP of six galaxies in the constellation of Serpens, the serpent, has been found to be at least 200 times more dense than the most crowded cluster of galaxies previously known.

The brightest member of this Serpens sextet, Dr. Carl K. Seyfert of Vanderbilt University announced, has an intrinsic total brightness as great as that of the nearby Spiral Galaxy in the constellation of Andromeda, which most astronomers believe to be quite similar to our own. The star density of this and the other five galaxies in the cluster thus becomes very high, for the brightness of stars depend on their masses.

In the entire survey, made with photographs taken with the Schmidt telescope of Harvard College Observatory, Dr. Seyfert found approximately 5,000 new galaxies.

Science News Letter, February 21, 1948

Books of the Week

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AIR PASSENGER TRAFFIC—William L. Grossman—*Chemical Publishing Co.,* 205 p., illus., $4.00. Especially for airline employees.

AIR TRANSPORTATION — *Association of American Railroads,* 127 p., illus., paper, free from Association of American Railroads, Transportation Building, Washington 6, D. C. Report of Subcommittee on Air Transport of the Railroad Committee for the Study of Transportation.

THE ARTIFACTS OF UAXACTUN, GUATEMALA—A. V. Kidder—*Carnegie Institution of Washington,* 76 p., 87 pl., paper $2.15, cloth $2.80.

BETTER WAYS OF GROWING UP: Psychology and Mental Hygiene for Youth—John E. Crawford and Luther E. Woodward—*Muhlenberg,* 270 p., illus., $3.00. Written for boys and girls to answer their questions and providing self-quizzes to raise questions.

CALCULUS AND ITS APPLICATIONS—Raymond D. Douglass and Samuel D. Zeldin—*Prentice-Hall,* 568 p., $5.15. A short course for engineering and science students.

DANGEROUS WORDS: A guide to the Law of Libel—Philip Wittenberg—*Columbia University Press,* 335 p., $5.00.

DESERTS ON THE MARCH—Paul B. Sears—*University of Oklahoma Press,* rev. ed., 178 p., $2.75. A new opportunity to read this story of how America's wealth is disappearing under our feet.

DWARF FRUIT TREES—Lawrence Southwick—*Macmillan,* 126 p., illus., 2.50. How to select and care for your own trees.

EXCAVATIONS AT KAMINALJUYU, GUATEMALA—Alfred V. Kidder, Jesse D. Jennings, and Edwin M. Shook—*Carnegie Institution of Washington,* 284 p., 207 pl., paper, $7.00, cloth $8.00. For those interested in archaeology and indigenous art.

THE HEATHENS: Primitive Man and His Religions—Willian Howells—*Doubleday,* 306 p., illus., $3.75. The author, an anthropologist, has found "that there is hardly a limit to what the human mind can fancy, but also that there are certain typical forms in religion."

HEATING AND VENTILATING'S ENGINEERING DATABOOK—Clifford Strock—*Industrial Press,* 570 p., illus., $7.00. A tremendous amount of useful information for engineers, architects, builders and others.

AN INTRODUCTION TO CHROMATOGRAPHY—Trevor Illtyd Williams—*Chemical Publishing Co.,* 100 p., illus., $4.00. A British text.

AN INTRODUCTION TO ORGANIC CHEMISTRY—Ira D. Garard—*Wiley,* 3d ed., 396 p., illus., $3.50. Intended not only for prospective chemists, but for students in many other fields.

LABORATORY HANDBOOK FOR GENERAL CHEMISTRY—Roland M. Whittaker and Alexander P. Marion—*Chemical Publishing Co.,* 363 p., illus., paper, $4.50. With ring binder.

MODERN CEREAL CHEMISTRY—D. W. Kent-Jones and A. J. Amos—*Northern Publishing Co.,* 4th ed., 651 p., illus., $15.00. Information for the cereal chemist and those who have to do with the use of grains.

MOST-OFTEN-NEEDED F.M. AND TELEVISION SERVICING INFORMATION—M. N. Beitman—*Supreme Publications,* 192 p., illus., paper, $2.00.

NEW TERMINOLOGY AND THE INDEX-CATALOGUE—Claudius F. Mayer—20 p., paper, free from the author, 5513 39th St., N. W., Washington, D. C. A paper presented at the Symposium on Medical Subject-Headings.

OPIATE ADDICTION—Alfred R. Lindesmith *Principia,* 238 p., $3.00. A sociologist discusses the nature of drug addiction and what it means as a social problem.

OUT OF THIS WORLD: Anesthetics and What They Do To You—Sylvan M. Shane—*Creative Age Press,* 110 p., illus., $2.00. A director of anesthesiology writes to inform and reassure the patient.

PROTEINS AND AMINO ACIDS IN NUTRITION—Melville Sahyun, ed.—*Reinhold,* 566 p., illus., $7.50. Discussions by workers in many specialized fields.

SHOOT THAT NEEDLE STRAIGHT—Robert Rantoul—*Bruce Humphries,* 220 p., illus., $2.75. A lightly written story of the experiences of a diabetic.

STATICS—Joseph H. Kindle and Harry L. Miller—*Ginn.,* 180 p., illus., $2.60. A text for pre-engineering students.

SURFACE CHEMISTRY FOR INDUSTRIAL RESEARCH—J. J. Bikerman—*Academic Press,* 464 p., illus., $8.00. Especially for those in industry who are interested in the why of what is being done there.

THE SYSTEMATIC IDENTIFICATION OF ORGANIC COMPOUNDS: A Laboratory Manual—Ralph L. Shriner and Reynold C. Fuson—*Wiley,* 3d ed., 370 p., illus., $4.00.

WEATHERWISE, Vol. 1, No. 1—Charles A. Federer, Jr., Ed.—*Amateur Weathermen of America*—20 p., illus., $3.00 a year. A new magazine for those interested in weather.

Science News Letter, February 21, 1948

CHEMISTRY

Boy Extracts Gold from Sea Water by Own Method

➤ GOLD from sea water, the dream of modern chemists as transmutation was of ancient alchemists, has been realized on a laboratory scale by George Camamis, 17, a senior at New Brunswick High School, New Brunswick, N. J. He used a method of his own devising for the extraction.

He made several gallons of sea water highly acid with hydrochloric, and added a gram of barium chloride. This produced a precipitate, which he allowed to settle for several days, then decanted the clear water above the precipitate into another vessel.

After neutralizing this water with sodium hydroxide and adding a very small quantity of barium chloride he obtained another precipitate, which again was allowed to settle for several days. Then he collected the precipitate, washed it with distilled water and dried it. This precipitate was supposed to contain the gold, in the form of a salt, barium aurate.

After drying the precipitate, he heated it with a blowpipe on a charcoal block, together with lead and borax. A glass bead resulted, in which a minute quantity of free gold was expected to be present.

Crushing the bead to a fine powder, he added mercury to pick up the gold and form an amalgam. Then he evaporated the mercury. A thin film of gold was left behind in his crucible.

Mr. Camamis reported his unique experiment in an essay submitted along with other qualifications that have won him a place among 40 winners of all-expense trips to Washington, D. C., to take part in the annual Science Talent Institute.

Science News Letter, February 21, 1948

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* *Kulp, J. L., Kerr, P. F., Science, Vol. 105, p. 418, 1947.*

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❁ *PORTABLE DISHWASHER, 16 inches in diameter and less than 15 inches high, can be set in the kitchen sink and attached to the faucet. Water jets propel the revolving basket of dishes during both washing and rinsing, and dishes for the average family are washed, rinsed and dried in five minutes.*

Science News Letter, February 21, 1948

❁ *WAFFLE COOKER, for the boarding house or restaurant, is a small oven-like device that cooks six waffles at a time. Additional units give it greater capacity. It is fed by automatic batter dispenser, and the waffles, each in its own drawer-like compartment, can be removed individually.*

Science News Letter, February 21, 1948

❁ *SUPERSONIC ENERGY generator, which delivers sound waves too high-pitched for the human ear to hear, is a single-frequency device which operates on any 110-volt alternating current line and produces vibrations of 400-kilocycle frequency. Such energy has many laboratory and industrial uses, including killing bacteria in milk.*

Science News Letter, February 21, 1948

❁ *PAINT-LINE marker for use in garages and factories makes neat two- to four-inch lines at a walking pace, and either straight or in curves. The handle*

of the device, shown in the picture, holds six quarts of paint which is released by a finger-grip trigger.

Science News Letter, February 21, 1948

❁ *BONDING AGENT to hold mortar to glass blocks in construction work is a rubbery material that expands with the mortar and the glass without rupturing the film. It can be applied with a caulking gun, or thinned down with a suitable solvent and applied by brush.*

Science News Letter, February 21, 1948

❁ *TEMPERATURE CONTROL for chicken brooders, an improved type, has a seamless bellows which contracts and expands indefinitely with temperature changes because it has no soldered joints to open up under use. The expansion and contraction of the bellows operates the temperature control mechanism.*

Science News Letter, February 21, 1948

❁ *PHOTOMICROGRAPHIC LAMP uses the war-developed zirconium concentrated-arc, claimed to be the closest approach yet attained to a point source of light. The lamp has a seven-lens system which enables an operator to get photomicrographs of high quality.*

Science News Letter, February 21, 1948

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Question Box

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